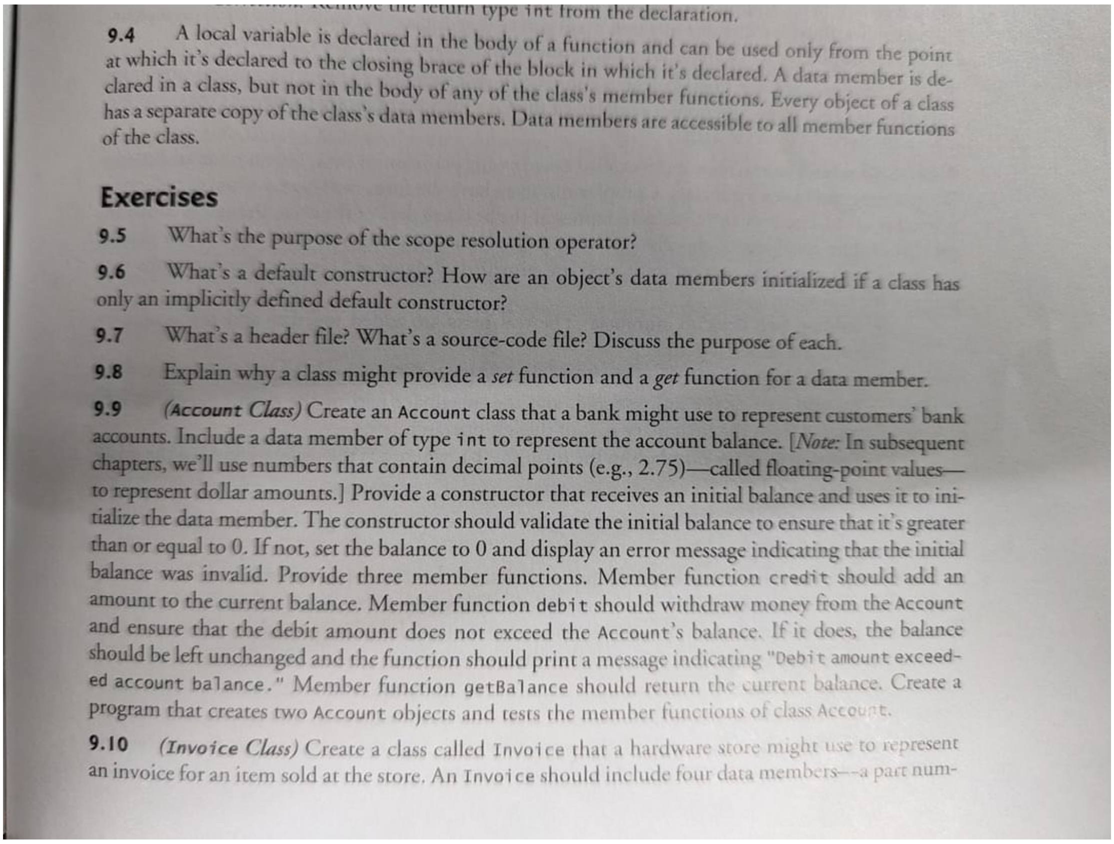


Remove the return type `int` from the declaration.

9.4 A local variable is declared in the body of a function and can be used only from the point at which it's declared to the closing brace of the block in which it's declared. A data member is declared in a class, but not in the body of any of the class's member functions. Every object of a class has a separate copy of the class's data members. Data members are accessible to all member functions of the class.

Exercises

9.5 What's the purpose of the scope resolution operator?

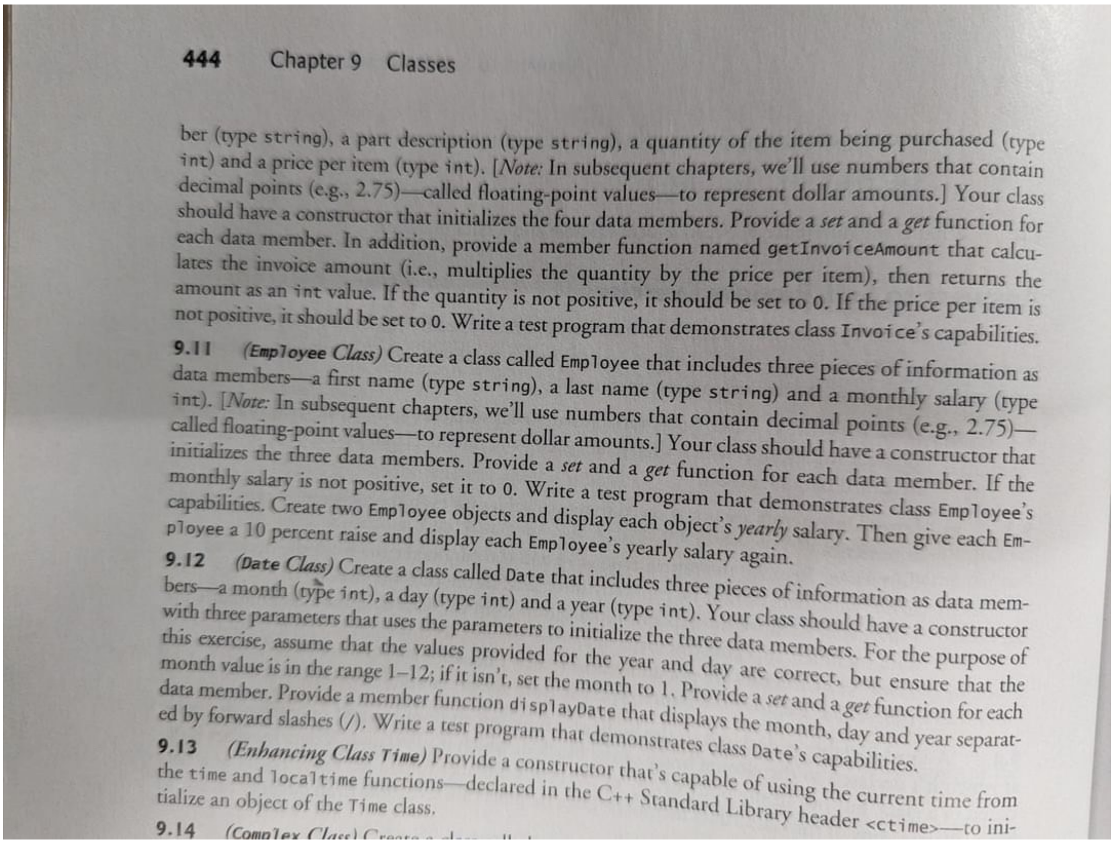
9.6 What's a default constructor? How are an object's data members initialized if a class has only an implicitly defined default constructor?

9.7 What's a header file? What's a source-code file? Discuss the purpose of each.

9.8 Explain why a class might provide a *set* function and a *get* function for a data member.

9.9 *(`Account` Class)* Create an `Account` class that a bank might use to represent customers' bank accounts. Include a data member of type `int` to represent the account balance. [*Note:* In subsequent chapters, we'll use numbers that contain decimal points (e.g., 2.75)—called floating-point values—to represent dollar amounts.] Provide a constructor that receives an initial balance and uses it to initialize the data member. The constructor should validate the initial balance to ensure that it's greater than or equal to 0. If not, set the balance to 0 and display an error message indicating that the initial balance was invalid. Provide three member functions. Member function `credit` should add an amount to the current balance. Member function `debit` should withdraw money from the `Account` and ensure that the debit amount does not exceed the `Account`'s balance. If it does, the balance should be left unchanged and the function should print a message indicating `"Debit amount exceeded account balance."` Member function `getBalance` should return the current balance. Create a program that creates two `Account` objects and tests the member functions of class `Account`.

9.10 *(`Invoice` Class)* Create a class called `Invoice` that a hardware store might use to represent an invoice for an item sold at the store. An `Invoice` should include four data members—a part num-



ber (type `string`), a part description (type `string`), a quantity of the item being purchased (type `int`) and a price per item (type `int`). [*Note:* In subsequent chapters, we'll use numbers that contain decimal points (e.g., 2.75)—called floating-point values—to represent dollar amounts.] Your class should have a constructor that initializes the four data members. Provide a *set* and a *get* function for each data member. In addition, provide a member function named `getInvoiceAmount` that calculates the invoice amount (i.e., multiplies the quantity by the price per item), then returns the amount as an `int` value. If the quantity is not positive, it should be set to `0`. If the price per item is not positive, it should be set to `0`. Write a test program that demonstrates class `Invoice`'s capabilities.

9.11 *(`Employee` Class)* Create a class called `Employee` that includes three pieces of information as data members—a first name (type `string`), a last name (type `string`) and a monthly salary (type `int`). [*Note:* In subsequent chapters, we'll use numbers that contain decimal points (e.g., 2.75)—called floating-point values—to represent dollar amounts.] Your class should have a constructor that initializes the three data members. Provide a *set* and a *get* function for each data member. If the monthly salary is not positive, set it to `0`. Write a test program that demonstrates class `Employee`'s capabilities. Create two `Employee` objects and display each object's *yearly* salary. Then give each `Employee` a 10 percent raise and display each `Employee`'s yearly salary again.

9.12 *(`Date` Class)* Create a class called `Date` that includes three pieces of information as data members—a month (type `int`), a day (type `int`) and a year (type `int`). Your class should have a constructor with three parameters that uses the parameters to initialize the three data members. For the purpose of this exercise, assume that the values provided for the year and day are correct, but ensure that the month value is in the range 1–12; if it isn't, set the month to 1. Provide a *set* and a *get* function for each data member. Provide a member function `displayDate` that displays the month, day and year separated by forward slashes (/). Write a test program that demonstrates class `Date`'s capabilities.

9.13 *(Enhancing Class `Time`)* Provide a constructor that's capable of using the current time from the `time` and `localtime` functions—declared in the C++ Standard Library header `<ctime>`—to initialize an object of the `Time` class.

9.14 *(Complex Class)* Create a cl